

LISTING OF CLAIMS

The listing of the claims will replace all prior versions, and listings, of claims in the application:

CLAIMS

What is claimed:

1. (original) A method of depositing a film on a substrate in a reaction chamber, comprising:

introducing a first gas into the reaction chamber;

initiating a first pulse of electromagnetic irradiation to form radicals species from said first gas, where the radical species react with the surface of the substrate to form a radical terminated surface on the substrate;

purging the reaction chamber;

introducing a second gas into the reactor; and

initiating a second pulse of electromagnetic irradiation to form second radicals species from said second gas, where the second radical species react with the radical terminated surface to form a layer of film on the substrate.

2. (withdrawn) A method of removing a film on a substrate in a reaction chamber, comprising:

introducing a gas into the reaction chamber;

irradiating the gas with a first pulse of electromagnetic irradiation, forming radical species from said gas; and

reacting the radicals with the film on the surface of the substrate to form a volatile compound and thus removing an atomic layer of the film.

3. (withdrawn) A method for depositing an atomic layer on a substrate in a reaction chamber comprising:

introducing reactant gas or gasses into the reaction chamber and reacting the reactant with the surface of the substrate to form an atomic layer on the surface of the substrate;

evacuating the reaction chamber; and

irradiating the surface of the substrate with ultra-violet radiation.

4. (currently amended) The method of claims 1, ~~2-~~or~~3~~ further comprising:
pre-treating the substrate to condition the surface of the substrate.
5. (currently amended) The method of claims 1, ~~2-~~or~~3~~ wherein said purging step
comprises evacuating the reaction chamber, purging with an inert gas, or both.
6. (original) The method of claim 1 further comprising:
purging the chamber after the step of initiating a second pulse of electromagnetic
irradiation; and
repeating the steps to form a desired film.
7. (currently amended) The method of claims 1 ~~or~~2 wherein the method is carried
out at a temperature in the range of approximately 20 to 400 °C.
8. (currently amended) The method of claims 1 ~~or~~2 wherein the method is carried
out at a temperature in the range of approximately 100 to 200 °C.
9. (currently amended) The method of claims 1, ~~2-~~or~~3~~ wherein the method is
carried out at a temperature in the range of approximately 20 to 30 °C.
10. (currently amended) The method of claims 1 ~~or~~2 wherein the electromagnetic
irradiation is comprised of visible light radiation, infrared radiation, ultraviolet radiation,
microwave radiation, radio frequency radiation or vacuum ultraviolet radiation.
11. (currently amended) The method of claims 1 ~~or~~2 wherein the introducing and
initiating steps are carried out at a pressure in the range of approximately 1mTorr to 760 Torr.
12. (currently amended) The method of claims 1 ~~or~~2 wherein the introducing and
initiating steps are carried out at a pressure in the range of less than approximately 150 Torr.
13. (currently amended) The method of claims 1 ~~or~~2 wherein the introducing and
initiating steps are carried out at a pressure in the range of less than approximately 15 Torr.
14. (withdrawn) The method of claim 3 wherein the method is carried out in a
vacuum and at a temperature in the range of approximately 20 to 30 °C.
15. (withdrawn) The method of claim 3 further comprising
purging the chamber following the irradiating step and,
repeating the steps a plurality of times with the same or different reactant gasses.